

A NEW SPECIES OF *MINURIA* DC. (ASTERACEAE: ASTEREAEE)

by

P. S. SHORT*

ABSTRACT

Short, P. S. A new species of *Minuria* DC. (Asteraceae: Astereae). *Muelleria* 7(3): 361–367. — A new species, *Minuria multiseta* P. S. Short, is described. It occurs in Western Australia, South Australia and the Northern Territory. Notes on its relationship with *M. gardneri* are provided.

INTRODUCTION

In a revision of *Minuria*, Lander & Barry (1980) recognized three new species, including *M. gardneri* Lander & Barry, a species deemed to be found in both South Australia and Western Australia. Six years later Cooke (1986) recorded in 'Fl. S. Australia' that he had given the species wider circumscription than Lander & Barry, and that the original description was based on 'relatively depauperate material' (Cooke *l.c.*, p. 1473). It is evident, however, that both the original description and that by Cooke encompass two distinct species. The additional species is described below.

METHODS

Data were gathered from herbarium specimens housed in AD, MEL and PERTH. Differences between the two species were statistically examined using a modified *t*-test for unequal variances.

Pollen:ovule ratios have been estimated on a capitulum basis, *i.e.* by counting the number of pollen grains in a single disc floret, multiplying that number by the number of disc florets, and then dividing by the total number of ray florets in the capitulum.

TAXONOMY

Minuria multiseta P. S. Short, *sp. nov.*

Herba perennis, 2.5–34 cm altam, axes majores ascendentes vel erecti, sparsim pubescentes. *Folia* alterna, sessilia, integra, linearia, 5–20 mm longa, *c.* 0.5–1 mm lata, glabra vel sparsim pilosa. *Capitula* solitaria, heterogama, radiata. *Involucrum* 3.8–5 mm diametro, multiseriale; bracteae 35–62, sublanceolatae, *c.* 2–3 mm longae, *c.* 0.4 mm latae, praecipue herbaceae sed marginibus superis et apicibus hyalinis. *Receptaculum* convexum, glabrum, foevatum. *Flosculi radii* feminei, 67–239, corolla 1.9–4 mm longa, ligula 0.9–2 mm longa, alba; cypselae subellipsoidea, 0.6–0.85 mm longae, 0.2–0.3 mm latae, sparsim pubescentes, purpureae; pappus setaceus, setas 8–11, barbellatas, ad basem conjunctae ferens. *Flosculi disci* masculini, 4–25, corolla 1.65–2.4 mm longa, (4)5–loba, lutea; antherae 5, 0.63–0.89 mm longae, sporangiis 0.45–0.72 mm longis, appendicibus terminalibus 0.14–0.22 mm longibus; cypselae steriles, glabrae; pappus cyathiformis, laceratus, setis 2–11 terminalibus, barbellatis.

HOLOTYPE: 15 km NW of Glendambo along Hwy to Coober Pedy. 30° 53'S, 135° 40'E. Growing in sand on outer edge of saline depression amongst *Halosarcia* and extending up sand dune where it occurs with *Zygophyllum*, 26.viii.1989, Short 3675 (MEL 1577157). **ISOTYPE:** AD, CANB, PERTH.

Perennial herb, flowering in the first year, 2.5–34 cm high, major axes ascending to erect, sparsely pubescent. *Leaves* alternate, sessile, entire, linear,

*National Herbarium of Victoria, Birdwood Avenue, South Yarra, Victoria, Australia 3141.

5–20 mm long, *c.* 0.5–1 mm wide, glabrous or very sparsely hairy. *Peduncles*, with several bract-like leaves, pubescent. *Capitula* solitary, heterogamous, radiate. *Involucre* 3.8–5 mm diam., multi-seriate; bracts 35–62, \pm lanceolate, *c.* 2–3 mm long, *c.* 0.4 mm wide, mainly herbaceous but at least the upper margins and apex usually hyaline. *Receptacle* convex, glabrous, pitted. *Ray florets* female, 67–329, in several rows, corolla 1.9–4 mm long, ligule 0.9–2 mm long, white; cypselas \pm ellipsoid, 0.6–0.85 mm long, 0.2–0.3 mm diam., sparsely pubescent, red-purple; pappus setaceous, bristles 8–11, barbellate, united at the base. *Disc florets* male, (4) 15–25, the corolla tubular, 1.65–2.4 mm long, 5-lobed, yellow; anthers 5, 0.63–0.89 mm long, microsporangia 0.45–0.72 mm long, terminal appendage 0.14–0.22 mm long; pollen grains 1220–4150 per floret; style arms 0.76–1 mm long; cypselas non-functional, glabrous; pappus a jagged cup *c.* 0.4 mm high with 2–11 terminal, barbellate bristles which are *c.* the length of the corolla tube.

DISTRIBUTION (Fig. 1):

Arid regions of Western Australia, Northern Territory and South Australia, between latitudes *c.* 24° and 31°S, and longitudes 125° and 136°E.

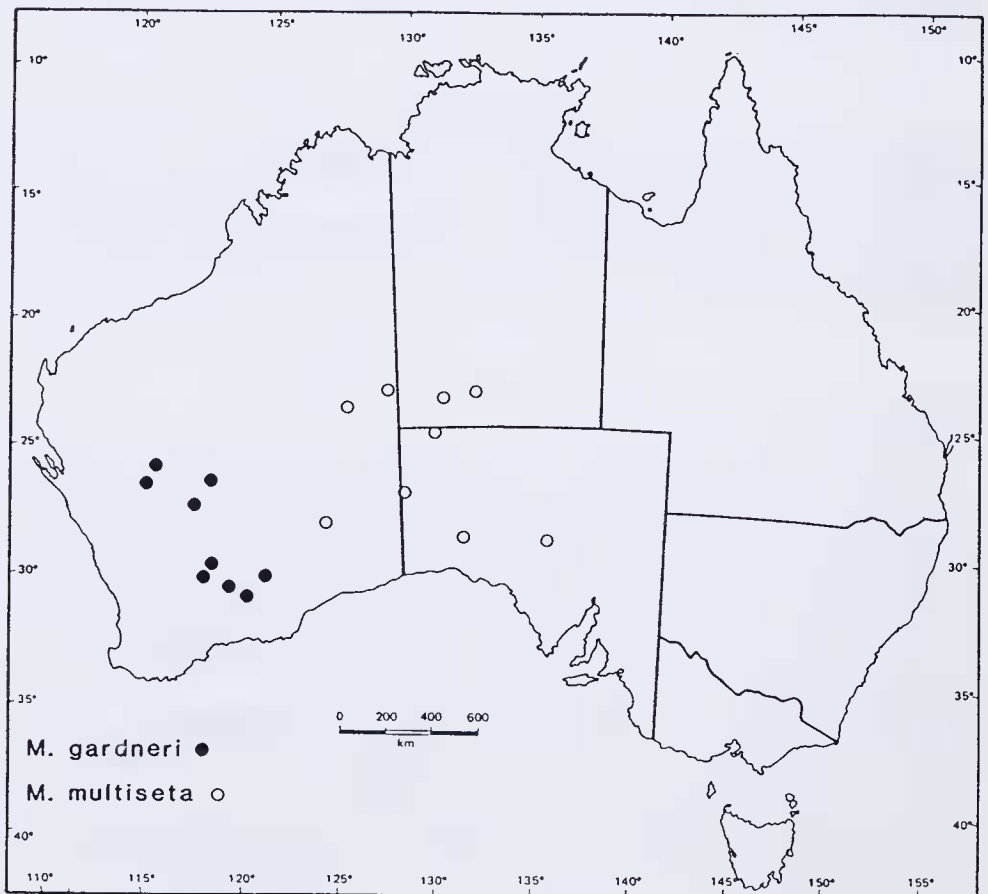


Fig. 1. Distribution of *M. gardneri* and *M. multiseta*.

ECOLOGY:

As with *M. gardneri* this species is most commonly found on the margins of salt lakes. Collectors' notes include: 'in loam over limestone, on rise near salt flat', 'In clay-loam, in myall association', '*Melaleuca* shrubland — shallow soils over gypsum' and 'on gypseous sandy soils of lake bed'.

NOTES:

This species differs from *M. gardneri* by many of the features of the inflorescence noted in (Table I). The *t*-tests show no differences in the number of ray florets and the total number of florets, but statistically significant differences ($P < 0.001$ in each case) are found in the number of disc florets, length of ray corolla and length of ligule, length of disc corolla, anther length, microsporangia length, length of the apical appendage of the anther, and pollen grains per floret. There is overlap in the range of values for some of the aforementioned features, making them impractical for ready identification. However, the species are readily differentiated from one another by absolute differences in the length of the ligule and the total length of the corolla of the ray florets (Fig. 2).

Table I. Comparison of *M. gardneri* with *M. multiseta*

Character	<i>M. gardneri</i>	<i>M. multiseta</i>
Total number of florets per capitulum	53-255 n = 31 \bar{x} = 137 S.D. = 51.1 S.E. = 9.2	76-259 n = 31 \bar{x} = 164 S.D. = 62.6 S.E. = 10.9
Number of ray florets per capitulum	50-210 n = 31 \bar{x} = 123.5 S.D. = 51.9 S.E. = 9.3	67-239 n = 33 \bar{x} = 143.3 S.D. = 62.5 S.E. = 10.9
Number of disc florets per capitulum	4-23 n = 31 \bar{x} = 10.3 S.D. = 4.7 S.E. = 0.85	4-30 n = 35 \bar{x} = 20.3 S.D. = 5.7 S.E. = 0.96
Percentage ray florets per capitulum	87-95	73-94
Length of ray corolla (mm)	0.75-1.5 n = 28 \bar{x} = 1.18 S.D. = 0.19 S.E. = 0.004	1.9-4.5 n = 63 \bar{x} = 3.54 S.D. = 0.59 S.E. = 0.074
Length of ligule (mm)	0.12-0.4 n = 23 \bar{x} = 0.24 S.D. = 0.71 S.E. = 0.15	0.9-3.2 n = 55 \bar{x} = 2.13 S.D. = 0.56 S.E. = 0.07
Length of disc corolla tube (mm)	0.9-1.6 n = 26 \bar{x} = 1.22 S.D. = 0.21 S.E. = 0.042	1.45-2.4 n = 39 \bar{x} = 1.86 S.D. = 0.21 S.E. = 0.034
No. lobes of disc corolla	3-5	(4)5
No. pappus bristles in disc floret	0-6	2-11

Character	<i>M. gardneri</i>	<i>M. multisetata</i>
Length of anthers (mm)	0.36–0.64 n = 20 \bar{x} = 0.47 S.D. = 0.01 S.E. = 0.002	0.63–0.89 n = 36 \bar{x} = 0.83 S.D. = 0.087 S.E. = 0.015
Length of microsporangia (mm)	0.3–0.5 n = 19 \bar{x} = 0.39 S.D. = 0.075 S.E. = 0.017	0.45–0.72 n = 36 \bar{x} = 0.64 S.D. = 0.078 S.E. = 0.013
Length of terminal anther appendage (mm)	0.04–0.19 n = 19 \bar{x} = 0.09 S.D. = 0.039 S.E. = 0.009	0.14–0.22 n = 36 \bar{x} = 0.18 S.D. = 0.017 S.E. = 0.003
Pollen grains per floret	360–1828 n = 14 \bar{x} = 1052 S.D. = 555 S.E. = 148	1220–5115 n = 21 \bar{x} = 2895 S.D. = 934 S.E. = 204
Pollen:ovule ratios	35–192 n = 14	68–1442 n = 21

The number of pappus bristles in the disc florets of both species may vary considerably, even within a single capitulum. Furthermore, the disc florets in both species may have 2–6 pappus bristles (Fig. 3). However, the number of bristles is a useful feature by which the species can be differentiated as any single capitulum of *M. gardneri* invariably contains some disc florets which either lack or have only a single pappus bristle. This is not the case for *M. multisetata* as two or more bristles are always present. Although other species of *Minuria* have as many pappus bristles in the disc florets the specific epithet, *multisetata*, has still been chosen for this species as it is unlikely to be confused with any other species but *M. gardneri*.

Disc florets of *M. multisetata* are predominantly five-lobed. Occasional malformed florets with four lobes, but five anthers, have been observed. In *M. gardneri* three, four and five-lobed disc florets, with the corresponding number of anthers, may be found within the same capitulum but more robust plants only tend to have five-lobed florets.

The number of disc and ray florets per capitulum of both species is seemingly influenced by the size of plants and the sequence of the development of capitula, e.g. in the type collection of *M. multisetata* 15–23 disc and 139–239 ray florets were found in fourteen capitula but the smallest, last formed capitulum in one of the smaller plants had only four disc and 72 ray florets. In *M. multisetata* there is also evidence that the number of ray florets is genetically determined. In *Whibley 975* plants, not dissimilar in size and containing a similar number of disc florets (16–28) to many in the type collection, had about half the number of ray florets (49–110) per capitulum. I have also observed similar 'doubling' in forms of *M. integerrima* (DC.) Benth.

The generally larger capitula, the larger ray florets and anthers, the usually greater number of disc florets (*i.e.* pollen-producing florets) per capitulum, and the greater production of pollen grains per disc floret suggest that *M. multisetata* outcrosses to a greater extent than *M. gardneri*. In a number of papers (*e.g.* Short 1981) I have indicated that pollen:ovule ratios (P/O) reflect differences in breeding systems between many species of Australian Asteraceae and P/O values have been determined for these species of *Minuria*. For both species the estimate of the P/O is effected by variation in the number of anthers per disc floret, and the

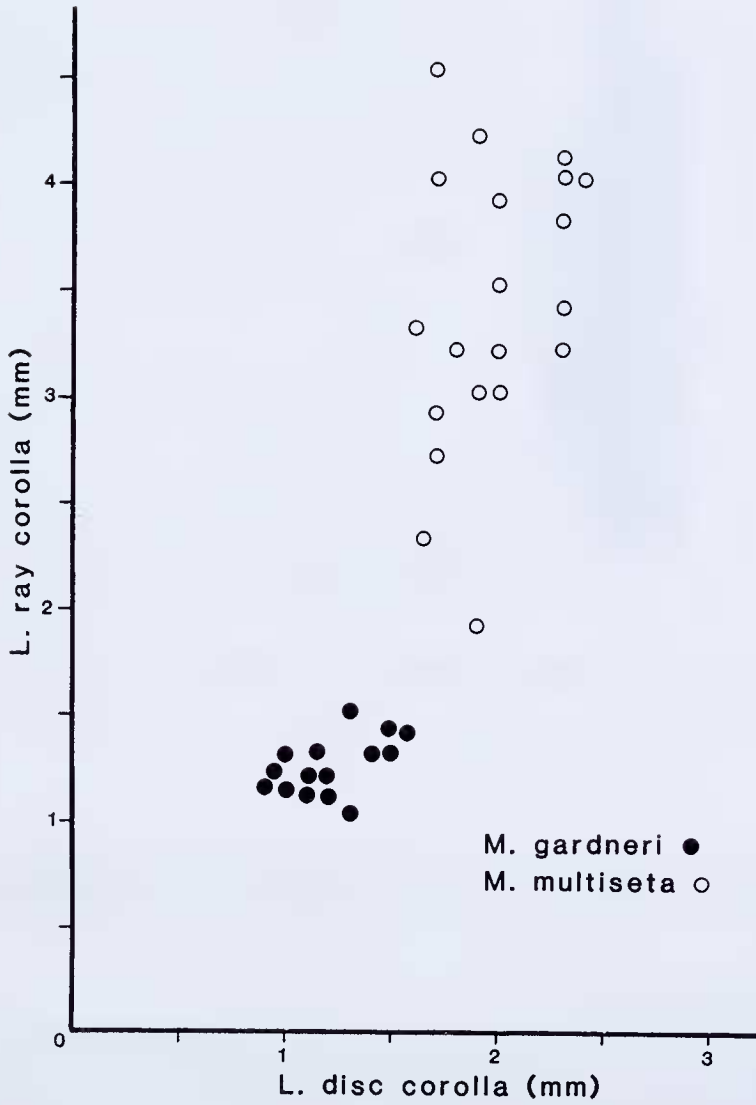


Fig. 2. Length of corolla tube of disc florets and corolla of ray florets in *M. gardneri* and *M. multiseta*.

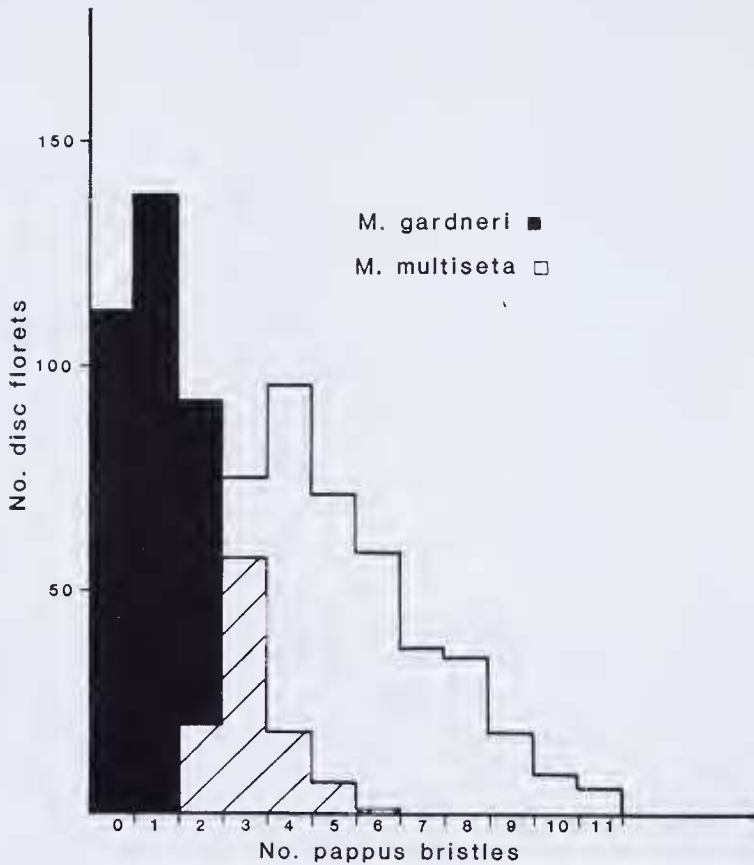


Fig. 3. The number of pappus bristles in disc florets of *M. gardneri* and *M. multiseta*. Overlap zone hatched.

ratio of ray to disc florets. Nonetheless, the range of values obtained (Table I) support the notion that *M. multiseta* outcrosses to a greater extent than *M. gardneri*.

SPECIMENS EXAMINED (Total):

Minuria multiseta

Western Australia — Van der Linden Lakes, 3.x.1966, *George 8235* (PERTH); 110 km N of Seemore Downs, 14.vii.1974, *George 11905* (PERTH); Lake Hopkins area, 9.ix.1978, *Henshall 2171* (PERTH).

Northern Territory — 8 miles S of Wallera Ranch, 23.viii.1973, *Latz 4113* (AD); Lake Amadeus area, 21.ix.1974, *Latz 5724* (AD).

South Australia — 164 km W of Vokes Hill junction, 25.viii.1980, *Alcock 8306* (AD); Serpentine Lakes, 25.viii.1980, *Donner 7407* (AD); 12 km E of Serpentine Lakes, 23.viii.1980, *Symon 12557* (AD, PERTH); 63 km W of Musgrave Park, 6.ix.1963, *Whibley 975* (AD); Lake Yarle, 15.viii.1977, *Williams 9573* (AD); Serpentine Lakes, 21.vii.1979, *Williams 10557* (AD); Serpentine Lakes, 29.vii.1979, *Williams 10694* (AD).

Minuria gardneri

Western Australia — Lake Miranda, near Mt Sir Samuel, 26.vii.1931, *Blackall 330* (PERTH); Western edge of Lake Annean, 28.viii.1986, *Cranfield 5956* (PERTH); 6 miles N of Bulga Downs, 25.ix.1975, *Demarz D5649* (PERTH); Salt lake immediately north-west of Norseman, 13.ix.1971, *Eichler 21261* (AD); Mount Sir Samuel, 26.vii.1931, *Gardner 2426* (PERTH, holo); 5.5 km E of Yellowdine, 4.xi.1983, *Haegi 2550 & Short* (MEL, PERTH); 30 km E of Sinclair Soak, 20.viii.1980, *Newbey 7199* (PERTH); 16 km SW of Jaurdi Homestead, 19.ix.1981, *Newbey 8898* (PERTH); 21 km S of Cue, *Short 2919* (MEL, PERTH); 12 km N of Hyden — Norseman track to Coolgardie, 10.x.1979, *Toelken 6520* (AD); S end of Lake Cowan, 24.vii.1967, *Wilson 6058* (PERTH); Lake Austin, 28.ix.1986, *Wilson 12333* (PERTH).

REFERENCES

- Cooke, D. A. (1986). *Minuria* DC. In Jessop, J. P. & Toelken, H. R. 'Flora of South Australia'. 4 ed. Pt. III. (Govt. Printer: Adelaide). pp. 1472–1474.
- Lander, N. S. & Barry, R. (1980). A revision of the genus *Minuria* DC. (Asteraceae, Astereae). *Nuytsia* 3: 221–237.
- Short, P. S. (1981). Pollen-ovule ratios, breeding systems and distribution patterns of some Australian Gnaphaliinae (Compositae: Inuleae). *Muelleria* 4: 395–417.

Manuscript received 15 March 1990; revised 10 April 1990.

